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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,511	07/11/2000	Wanda Andreoni	CH-1999-0004US1	2057

7590 01/14/2003
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EXAMINER

XU, LING X

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 01/14/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

AS15

Office Action Summary

Application No.

09/614,511

Applicant(s)

ANDREONI ET AL.

Examiner

Ling X. Xu

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicants' amendments filed on 12/5/2002 have been entered. Figure 1 has been cancelled.

Claim

2. Applicant is advised that should newly amended claim 15 and its dependent claims 16-18 be found allowable, claims 19-22 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 15, line 6, there is insufficient antecedent basis for the limitation of "said compound" in the claim.

In claims 15 and 19, it is unclear if "zone" is the same as "layer". It is also unclear if the luminescent layer is a separate layer or a layer within either hole injecting and transporting zone or electron injecting and transporting zone.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. in view of Moore et al. for the reasons of record in Paper No.13.

5. Claims 15-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al and Moore et al. as applied to claims 1-14 above, and further in view of applicants admission for the reasons of record in Paper No. 13.

Response to Arguments

6. Applicant's arguments filed 12/5/2002 have been fully considered but they are not persuasive.

With respect to 35 USC 112(2) rejections, applicants argue that the use of the term "zone" with respect to components of an EL device is well known in the art and thus not indefinite. However, the rejection made in the prior Office action was not because of the use of the term "zone" alone but because of two similar terms "zone" and "layer" are used in the same claims to describe the components of an EL device. It

is unclear if "zone" is the same as "layer". If "zone" and "layer" are not the same, then it is unclear if the luminescent layer is a separate layer or a layer that is included in either hole injecting and transporting zone or electron injecting and transporting zone. It is suggested that applicants to use either "zone" or "layer" instead of using both in the same claim to describe the components of an EL device.

With respect to 35 USC 103(a) rejections, applicants argue that no motivation to combine the references and even combining the references would not produce the claimed invention. The Examiner disagrees. The Examiner also disagrees applicants' assertion that the Examiner has admitted that neither of these references described the invention but claims that combination of these teachings would be obvious to a person skilled in the art and the rejection fails to take into account the absence of the claimed composition in either reference.

As state in the prior Office action, Tang discloses that an EL device comprises an organic electron transporting zone contains tris(8-quinolinol)aluminum Alq_3 (Col. 16, lines 1-45) as luminescent materials.

Moore teaches the use of substituted aluminum chelate compound in an EL device (Col.5, lines 45-67). The substitutes may be made in any or all six positions including 3-, 4- and 5-positions of the quinoline ring [Col. 5, formula (III)].

Moore also teaches that substituents on the 8-quinolinolato rings can also perform useful hue shifting functions. The quinoline ring consists of fused benzo and pyridino rings. When the pyridino ring component of the quinoline ring (2, 3, and 4 positions of the quinoline ring) is substituted with one or more electron donating

Art Unit: 1775

substituents the effect is to shift the hue of emission to lower wavelength (Col. 6, lines 59-67). When any or all the benzo ring components of the quinoline ring (5, 6, and 7 positions of quinoline ring) is substituted with electron accepting substituents the effect is to shift the hue of emission to shorter wavelengths (Col. 7, lines 10-20). Moore lists the possible substituents as electron donating and accepting substituents, such as – CH₃, -CF₃, -CH, -OCH₃, -OC₂H₅ (Col. 7-10). Accordingly, Moore clearly teaches that the substitution can be made in 3 or 4 positions with electron donating groups and in 5 positions with electron accepting groups.

As stated in the prior Office action, absence of showing unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the claimed substituted Alq₃ compound for Tang's EL device, because Moore disclose the use of same or similar substituents on the 8-quinolinolato rings can perform useful hue shifting functions.

In summary, the combination of Tang and Moore clearly teach the claimed invention and Moore clearly teaches the substituents on the 8-quinolinolato rings can perform useful hue shifting functions and therefore provides the motivation for one skilled in the art to combine Moore and Tang references.

Applicants also argue that Moore discloses a large variety of substituents each of which can be placed at one or more of 6 positions and each of which may or may not be electro-donating or electron accepting and any of which can be used in an electroluminescent device, and therefore, Moore does not provide a teaching or suggestion of the instant claimed composition.

Moore may have taught other embodiments which are not related to the present application such as other substituents which may or may not be electro-donating or electron accepting groups. However, as stated above, Moore clearly teaches that the substitution can be made in 3 or 4 positions with electron donating group and in 5 positions with electron accepting group. The combination of Tang and Moore teach the present invention.

Applicants also argue that the instantly claimed invention requires specific substitutions of a very specific nature and these specific restrictions are not provided by Moore. Specifically, Moore's composition is a mixture of substituted ligands and unsubstituted ligands, which is not the same as the instantly claimed compounds and could not be expected to provide the same material properties of the claimed invention.

Moore may have taught other embodiments which is not related to the present application including a mixture of substituted ligands and unsubstituted ligands, however, as stated above, Moore clearly teaches that the substitution can be made in 3 or 4 position with electron donating group and in 5 position with electron accepting group. The combination of Tang and Moore teaches the present invention.

Applicants also argue that the product produced by the Moore patent would not result in the instantly claimed invention because the instantly claimed invention does not allow for substituents at all positions and only allows for and requires specific substituents at specific position. The Examiner disagrees.

Moore may have taught that the substituents can be placed in the positions other than the claimed positions or discloses the preferred embodiment of substituents be

Art Unit: 1775

placed in the positions other than the claimed positions, such as at Column 6, lines 45-58 cited by the applicants, in discussing placement of substituents. Although Moore does not limit the substitution be made to the specific positions as claimed, however, because Moore clearly teaches the substituents can be placed at the positions including the claimed positions, position 3 or 4 and 5 and the advantage of placing the substituents in these positions, as stated above, the combination of Tang and Moore clearly teach the present invention.

Applicants also argue that the Examiner simplifies Moore as teaching only a few substituents among which can be found those of the claimed invention. Specifically, applicants indicated that Moore discloses, in one table alone, not the 4 substituents mentioned by the Examiner, but 194 substituents.

However, as recited in the present application in claims 1, 8, 15 and 19, the possible choices of the unspecified electron-donor groups and electron-acceptor or a p-delocalizing groups could be much more than the number disclosed by Moore, as indicated by the applicants. Even in the dependent claims 2-4, 9-10, 16-18 and 20-22, the possible choices of the electron-donor groups and the electron-acceptor or p-delocalizing groups are much more than the number disclosed by Moore. It is much more complicated to speculate how much substituents are included in the electro-donor groups and electro-acceptor or p-delocalizing groups claimed in the present application but certainly the number is not just a few specific substituents as indicated by the applicants.

Applicants also argue that Moore addresses electro-donating and electro-accepting substituents separately and makes no suggestion to combine these in one composition. The Examiner disagrees. The Examiner also disagrees with applicants' assertion that following Moore, if an electro-donor substituent were used it would be at the 2 position and Moore does not teach or suggest the required presence of the electron-acceptor substituent at position 5.

As stated above, Moore discloses that the electro-donor substituent can be placed in 2, 3, or 4 and the electro-acceptor substituent can be placed in 5, 6 or 7. Moore discusses both electron-donating substitution and electron acceptor substitution together at Col. 7, lines 6-13 and lines 14-18, respectively. Moore clearly teaches that any or all the 6 positions can be substituted (simultaneous substitution in one composition). Therefore, the combination of Tang and Moore, as discussed above, clearly teach the present invention.

Applicants further argue that combining Tang and Moore then would result in an electroluminescent device with a luminescent layer containing unsubstituted Alq3 and at least one of 53×10^{12} substituted Alq compositions and this combination does not teach or suggest the claimed invention.

As stated above, it is much more complicated to speculate how much substituents are included in the electro-donor groups and electro-acceptor or p-delocalizing groups claimed in the present application but certainly the number is not just a few as indicated by the applicants.

As also stated above, Moore may have taught other embodiments which is not related to the present application including unsubstituted Alq3, a mixture of substituted ligands and unsubstituted ligands, or other substituents that are not claimed in the present application, or substituents placed in the positions other than the claimed positions, as indicated by the applicants. However, because Moore clearly teaches the substituents can be placed at the positions including the claimed positions, position 3 or 4 and 5 and the advantage of placing the substituents in these positions, the combination of Tang and Moore clearly teach the present invention and Moore clearly provides the motivation to combine Tang and Moore.

Conclusion

7. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 1775

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 703-305-0395. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

lx

LX

January 10, 2003


DEBORAH JONES
SUPERVISOR/ART UNIT EXAMINER